Laboratory Operating Policy

Checkout and Launch Control System (CLCS)

84K00180

Approval:

Chief, Subsystem Engineering Date	Manager, Developmental Laboratory Operations Date

NOTE: See "**Supporting Document Note**" on following page

PREPARED BY: T. R. Lundgren

Supporting Document Note: Acronyms and definitions of many common CLCS terms may be found in the following documents: CLCS Acronyms 84K00240 and CLCS Project Glossary 84K00250.

REVISION HISTORY

REV	DESCRIPTION	DATE

LIST OF EFFECTIVE PAGES				
Dates of issue of change pages are:				
Page No.	**A or D***	**Issue or Change No.**	**CR No.**	**Effective Date****

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1. INTRODUCTION

1.1 PURPOSE

This manual defines the Checkout and Launch Control System (CLCS) Laboratory Operations policies, procedures and processes. It is intended to provide direction to personnel utilizing laboratory facilities and services to promote safe, effective, and efficient operations to maximize CLCS resources.

1.2 SCOPE

This manual is applicable to all CLCS personnel, their guests, product vendors, and all other personnel utilizing CLCS developmental and operational laboratories.

1.3 EFFECTIVITY

Upon signature approval, this manual becomes effective and will remain in effect throughout the lifecycle of the CLCS program unless superseded or canceled. This manual establishes laboratory operations baseline requirements and may be revised as required.

1.4 AUTHORITY

Development of this manual is to support CLCS Laboratory Operations, as authorized by the KSC Program Management Council (PMC). The PMC authorized the CLCS CCB to function as the change authority for the CLCS Project.

2. RELATED DOCUMENTS

2.1 APPLICABLE DOCUMENTS

Applicable documents are those documents whose contents are considered to form a part of this document. The specified parts of the applicable documents are as significant as if stated within the body of this document. Documents identified are the latest issue (LI) unless specifically indicated. These documents are:

- NHB 1700.1 NASA Safety Policy and Requirements Handbook
- NMI 5320.6 Implementation of NASA Standard Electrical, Electronic, and Electromechanical (EEE) Parts Program
- NSS 1740.11 NASA Safety Standards for Fire Protection
- NSS 1740.13 NASA Software Safety Standard
- KHB 1610.1 KSC Security Handbook
- KHB 1710.2 KSC Safety Practices Handbook
- 84K00052 CLCS Configuration Management Plan

2.2 REFERENCE DOCUMENTS

Referenced documents are those documents which, although not a part of this document, serve to clarify its contents. The documents in this paragraph are provided as reference material. Documents identified are the latest issue (LI) unless specifically indicated. In case of conflict, this manual will take precedence unless the referenced document is of a higher level. These documents are:

- KHB 1860.2 KSC Non-ionizing Radiation Protection Program
- KSC-DE-512-SM Guide for Design Engineering of GSE and Facilities for Use at KSC
- KSC-STD-E-002 Hazard Proofing of Electrically Energized Equipment
- KSC-STD-E-011 Electrical Power Receptacles
- KSC-STD-E-0012 Bonding and Grounding

2.3 LIST OF FIGURES

3. LABORATORY ADMINISTRATION

3.1 GENERAL

The CLCS Laboratories are managed work environments that support the development, testing, and implementation of the CLCS program products. The following policies, procedures and processes establish the minimum requirements necessary to accomplish program goals within the framework of Federal, NASA, State, and local laws, regulations, and requirements.

The CLCS Laboratories are located in the following facilities:

PCC (Building K6-1094)	Room 3015	Software Laboratory
	Room 3015A	Gateway Laboratory
	Room 3041	Control Laboratory
	Room 3041A	Network Laboratory
LCC (Building K6-900)	Room 2R26	IDE Laboratory
	Firing Room Two	LCC-X
HMF (Building M7-1061)	Room 105	Computer Room
	Room 105A	Equipment Room

3.2 MANAGEMENT OF LABORATORY OPERATIONS

All CLCS laboratory operations shall be under the management of the CLCS Laboratory Manager. It is the responsibility of the manager to ensure that all work performed in the CLCS laboratories is in accordance with all governing standards, requirements, and laws. The manager may delegate various responsibilities to other entities, but final authority shall remain with the CLCS Laboratory Manager.

3.3 TASK NOTIFICATION AND SCHEDULING

To ensure an efficient and timely allocation of laboratory resources, all tasks performed in the CLCS Laboratories will be coordinated with the CLCS Laboratory Manager. A schedule of planned activities for each laboratory will be published weekly. Emergency or higher priority tasks will be scheduled real-time after consulting with the Laboratory Manager.

4. LABORATORY SAFETY

A safe operating environment is imperative to ensure the health and well being of all personnel, to minimize equipment failure and to maximize the success of the CLCS mission. It is the responsibility of all personnel utilizing the Laboratories to perform their work in a safe manner. Adherence to Occupational Safety and Health Administration (OSHA), NASA (NHB 1700.1, "NASA Safety Policy and Requirements Handbook"), and KSC (KHB 1710.2, "KSC Safety Practices Handbook") Safety requirements shall be maintained in addition to the application of "common-sense."

4.1 SIGNAGE

In the event an unsafe condition is created or will be present in the laboratories, signs shall be fabricated and appropriately displayed in obvious locations to warn personnel of the dangerous condition. In situations where signage will not provide adequate protection to personnel, barriers shall be constructed to prevent ingress to the affected area.

4.2 OPEN FLOORING

When flooring is removed (i.e., to facilitate cabling, equipment installation/ removal, or utility work, etc.) the amount of removed decking shall not prohibit travel to emergency exits. No more than 30% of the affected walking surface area shall be unavailable to personnel travel at any given time. The Laboratory Manager shall coordinate with the Fire department to schedule alarm outages to prevent false alarms due to dust movement caused by large areas of open floor tiles.

4.3 TRIPPING HAZARDS

The creation of tripping hazards introduces undue risks into the working environment and can lead to severe injury. Cables, lines, cords, or other objects shall not be strung across walking areas unless an approved floor cover device is used and the device marked to clearly warn personnel as to the tripping danger.

4.4 FIRE SAFETY

The CLCS Laboratories shall maintain strict adherence to all established Federal and NASA fire safety codes.

Combustible materials, such as packing containers, foam and paper, shall not be allowed to accumulate in the laboratories. Reusable packaging materials shall be returned to Logistics or moved to a suitable storage area. Waste materials shall be disposed of in accordance with established processes in effect. Equipment stored temporarily (two weeks or less) shall be placed out of normal

walking paths. Packaged equipment left in the Laboratories for more than two weeks shall be removed to a suitable, designated storage area outside of the Laboratories.

All laboratory aisleways shall be keep clear and free of encumbrances to allow emergency egress in the event of an emergency.

4.5 EQUIPMENT

Equipment shall not be stored, installed, or placed on unstable surfaces, above the 6 foot level, or in a position where the placed object could fall and create damage to the equipment, other equipment, or personnel in the vicinity.

4.6 ELECTRICAL HAZARDS

All CLCS Laboratories shall conform to the requirements of the National Electric Code.

Only one multiple outlet extension box per fixed installed receptacle shall be used in the Laboratories. All extension cords used shall be of temporary use and shall not be installed below the floor level. Extension cords shall be checked weekly to ensure their serviceability. When extension cords are utilized for more than one month, an Engineering Support Request shall be made to install permanent electrical services.

4.7 USE OF RADIO FREQUENCY (RF) TRANSMISSION DEVICES

RF transmitters (i.e., cellular telephones, active pagers, and radios) can induce undesirable voltages/currents into surrounding unprotected or exposed electronic devices and produce error conditions. Therefore, use of RF transmission devices in the Laboratories is prohibited.

5. SECURITY

All but one CLCS Laboratory, the LCC-X Laboratory, is under security control. Entry requirements to all other Laboratories for assigned personnel and visitors are governed by regulations established in KHB 1610.1, “KSC Security Handbook.”

5.1 LABORATORY ACCESS

All personnel assigned tasks in the CLCS Laboratories must have an authorized clearance displayed on their person to enter the facilities. Entry security codes and equipment passwords shall only be disclosed to authorized employees by the employee’s management or the Laboratory Manager. Disclosure of security codes and passwords to unauthorized persons is prohibited. Personnel without authorized clearance requiring entry into the Laboratories must be escorted by a person with approved access. Escorts shall remain with their visitor(s) at all times and are responsible for the actions of their guests. Specific Laboratory entry details are provided in the following sections.

5.2 PCC LABORATORIES

The PCC Laboratories are located on the Southeast side of the third floor in the PCC (see Figure 1).

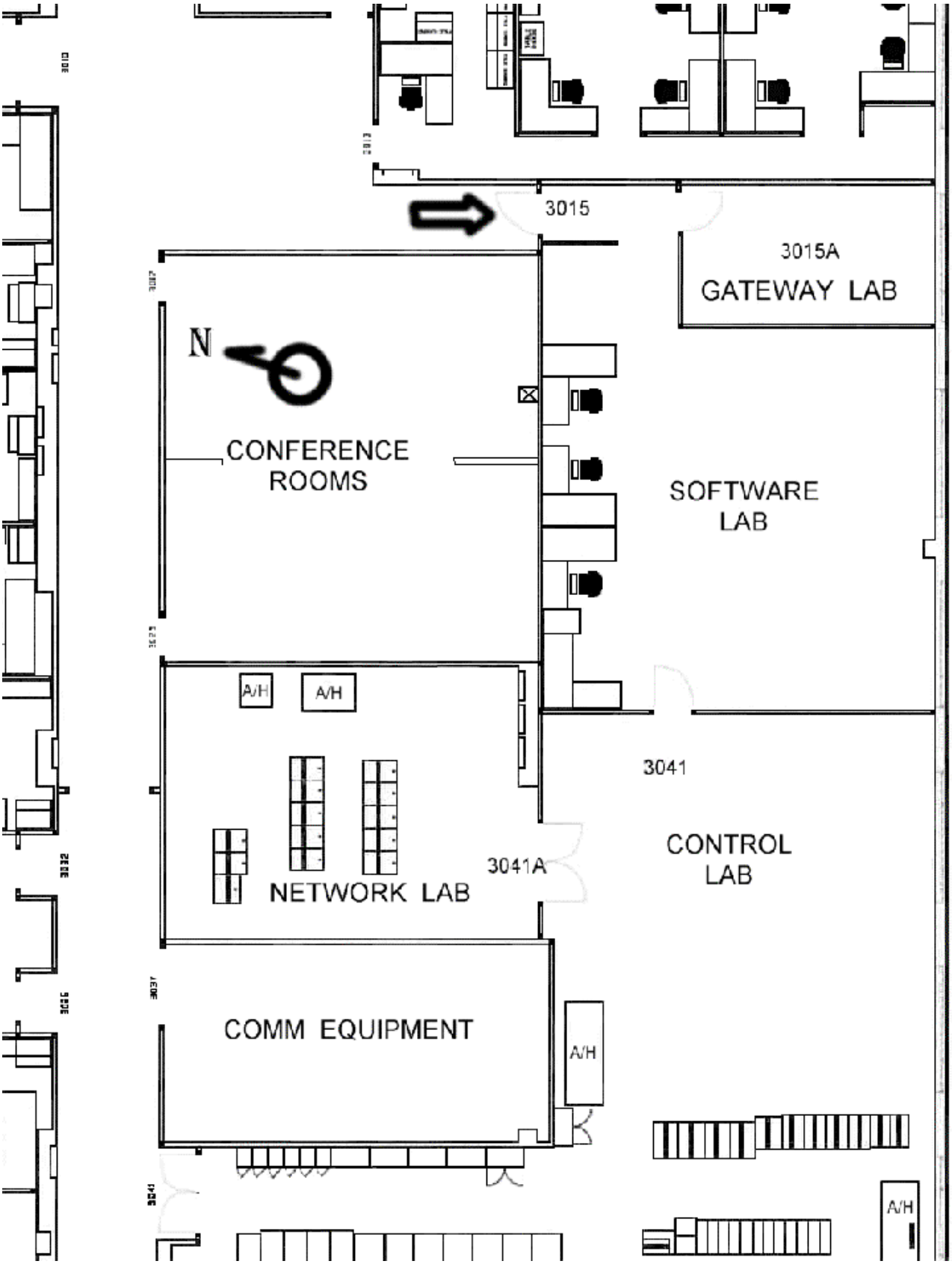

Figure 1 PCC Laboratories

5.2.1 SOFTWARE DEVELOPMENT (3015) AND GATEWAY (3015A) LABORATORIES

A cipher lock at the East entry of Room 3015 and a PACAS card reader at the West entry of Room 3015 controls access to the Software Laboratory (Room 3015). Access to the Gateway Laboratory (Room 3015A) is through Room 3015 and requires no additional controls.

5.2.2 CONTROL (3041) AND NETWORK (3041a) LABORATORIES

PACAS card readers control entry into all entries into the Control Laboratory (Room 3041). Access to the Network Laboratory (Room 3041A) is through Room 3041 and requires no additional controls.

5.3 LCC LABORATORIES

The LCC Laboratories are located on the second floor, Room 2R26 (IDE Laboratory) and third floor, Firing Room Two (LCC-X Laboratory) in the LCC (see Figure 2). The LCC-X Laboratory serves two functions. It is used to gather input from the user community and it is used as a conceptual show room to demonstrate CLCS products.

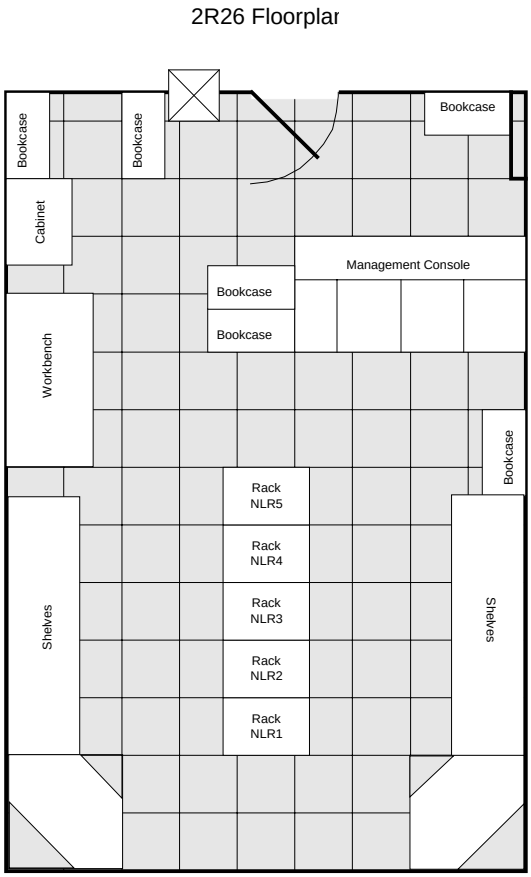

Figure 2.1 LCC-2R26 IDE Laboratory

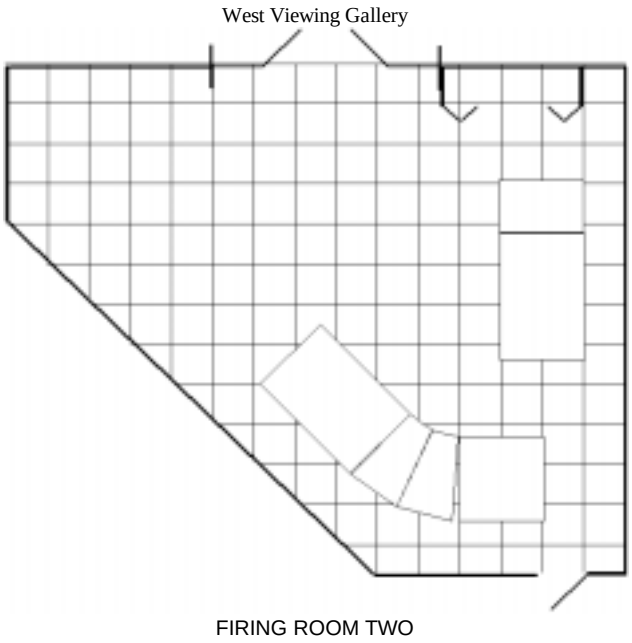

Figure 2.2 LCC-X Laboratory

5.3.1 IDE LABORATORY

A single cipher lock controls entry into the IDE Laboratory (Room 2R26).

5.3.2 LCC-X LABORATORY

Although the LCC-X Laboratory is located in Firing Room Two, access is gained through the Viewing Deck between Firing Rooms One and Two. No security controls are required to enter this room unless there is a Launch Countdown in progress. In this situation, the entire LCC is under Security control and access into the entire facility is limited.

5.4 HMF LABORATORY

The HMF Laboratory consists of a Computer Room (Room 105) and its attached Equipment Room (Room 105A) (see Figure 3). Cipher locks at the entry to Rooms 105 on the North side and Room 105A on the East side control entry.

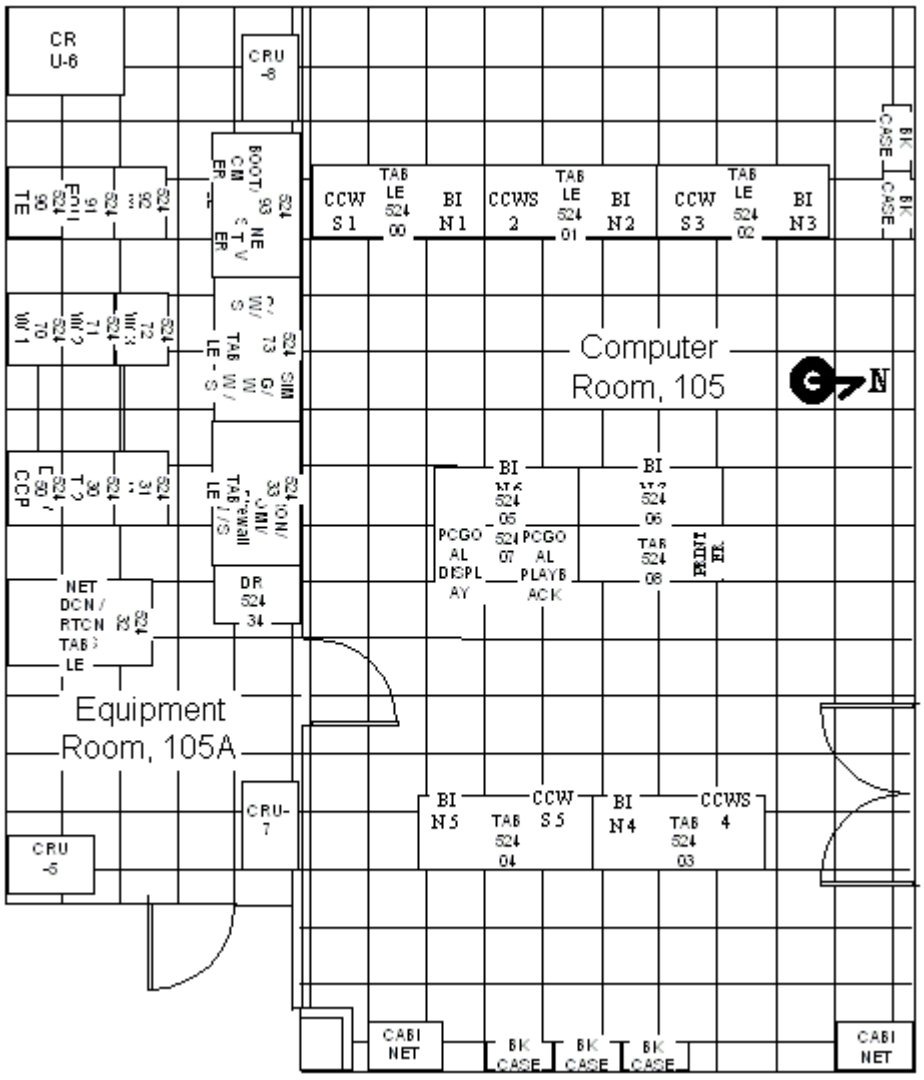

Figure 3 HMF Laboratory

6. CONFIGURATION MANAGEMENT

The use of configuration management is essential to maintain control of the CLCS Laboratories. The Configuration Management Plan, 84K00052, will be strictly enforced to ensure CLCS Laboratories are providing maximum resource allocation.

6.1 GENERAL

The CLCS Laboratory Manager shall be responsible for ensuring that all Laboratories under configuration control are maintained in their established configuration. When a CLCS Laboratory is placed into configuration management, no work shall be performed that alters that configuration unless approved by the Integration Control Panel (ICP). When configuration changes are deemed necessary, it shall be the Laboratory Manager's responsibility to coordinate the changes between the requesting party and the ICP.

7. LABORATORY USE GUIDELINES

CLCS Laboratories are established to perform required tasks necessary to accomplish the CLCS mission. Their use is controlled by various requirements levied by NASA and other governing authorities. To ensure that the Laboratories provide an environment conducive to positive production, all personnel utilizing the Laboratories shall adhere to the following basic guidelines, in addition to the above requirements.

7.1 HOUSEKEEPING

Laboratories shall be maintained in a clean and orderly fashion and remain free of unnecessary debris. Personnel utilizing these facilities are required to remove personal materials brought into the laboratories when their work tasks are complete unless arrangements are made with the Laboratory Manager. Personal materials remaining will be transferred to the CLCS Lost & Found Department for reclaiming.

7.2 FOODS AND LIQUIDS

The use of foods and liquids in an electronic environment introduces the potential for electric shock and shorting, loss of equipment resources, delay in development work, and schedule impact. In addition, food and liquid wastes (i.e., paper, containers, cans, cups, etc.) invite bugs that may harbor inside critical components. Therefore, no foods or liquids will be permitted in the CLCS Laboratories.

7.3 CABLING

When the running of cabling between equipment is necessary for the operation or testing of hardware, cables shall be routed in an organized, orderly fashion and not present a tripping or choking hazard. It is preferred that cables be run under raised flooring and be bundled together to minimize clutter or entanglements. When cabling produces excess line, cables shall be coiled and arranged to reduce space.